SAF-RC-032
100-F Remaining Sites Burial Grounds - Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02 MJP 03/13/06
INITIAL/DATE

COMMENTS:

SDG K0146 **SAF-RC-032**

Waste Site: 126-F-2

Date: 1 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100F Remaining Sites Burial Grounds – Soil – Full Protocol - Waste Site 126-F-2
Subject: Inorganics - Data Package No. K0146-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0146 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10VC1	12/14/05	Soil	C	See note 1
J10VC2	12/14/05	Soil	C	See note 1
J10VC3	12/14/05	Soil	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J10VC3) was submitted for analysis. Aluminum, barium, calcium, chromium, copper, iron, potassium, manganese, magnesium, sodium, lead, silicon, vanadium and zinc were detected in the equipment blank. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a MS recovery outside QC limits (136.8%), all copper results were qualified as estimates and flagged "J".

Due to a MS recovery outside QC limits (40.2%), all antimony results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (70.9%), all lead results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (36.7%), all silicon results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J10VC1/J10VC2) were submitted for analysis. Field duplicates are assessed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. K0146 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a MS recovery outside QC limits (136.8%), all copper results were qualified as estimates and flagged "J".
- Due to a MS recovery outside QC limits (40.2%), all antimony results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (70.9%), all lead results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (36.7%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0146	REVIEWER: TLT	Project: 126-F-2	PAGE: 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silicon Lead	J	All	RPD
Copper Antimony	J	All	MS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD									
Lab: LLI	SDG: K0146								
Sample Number		J10VC1		J10VC2		J10VC3			
Remarks				Duplicate		E. Blank			
Sample Date		12/14/05		12/14/05		12/14/05			
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.14	U	0.14	U	0.14	U		
Aluminum		6290		5860		47.2			
Arsenic	10	3.0		2.9		0.33	U		
Boron		5.5		5.6		0.26	U		
Barium	2	82.4		82.3		1.3			
Beryllium		0.30		0.28		0.01	U		
Calcium		6730		6510		24.2			
Cadmium	0.2	0.07	U	0.07	U	0.07	U		
Cobalt		6.1		6.2		0.12	U		
Chromium	1	10.9		10.4		0.19			
Copper		16.8	J	17.4	J	0.19	J		
Iron		17500		16400		311			
Mercury	0.2	0.01	U	0.02	U	0.02	U		
Potassium		1210		1120		19.6			
Magnesium		3930		3790		7.4			
Manganese		274		267		4.3			
Molybdenum		0.38		0.39		0.13	U		
Sodium		158		157		6.3			
Nickel		10.3		10.3		0.13			
Lead	5	17.2	J	11.7	J	0.40	J		
Antimony		0.48	J	0.40	UJ	0.39	UJ		
Selenium	1	0.37		0.36	U	0.35	U		
Silicon		286	J	346	J	54.8	J		
Vanadium		41.6		38.7		0.16			
Zinc	1	76.9		63.7		1.5			

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 12/29/05

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0512L942

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J10VC1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	6290	MG/KG	1.8	1.0
		Arsenic, Total	3.0	MG/KG	0.34	1.0
		Boron, Total	5.5	MG/KG	0.27	1.0
		Barium, Total	82.4	MG/KG	0.02	1.0
		Beryllium, Total	0.30	MG/KG	0.01	1.0
		Calcium, Total	6730	MG/KG	1.2	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	6.1	MG/KG	0.12	1.0
		Chromium, Total	10.9	MG/KG	0.16	1.0
		Copper, Total	16.8 J	MG/KG	0.12	1.0
		Iron, Total	17500	MG/KG	3.2	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1210	MG/KG	5.6	1.0
		Magnesium, Total	3930	MG/KG	1.4	1.0
		Manganese, Total	274	MG/KG	0.02	1.0
		Molybdenum, Total	0.38	MG/KG	0.13	1.0
		Sodium, Total	158	MG/KG	0.17	1.0
		Nickel, Total	10.3	MG/KG	0.13	1.0
		Lead, Total	17.2 J	MG/KG	0.31	1.0
		Antimony, Total	0.48 J	MG/KG	0.40	1.0
		Selenium, Total	0.37	MG/KG	0.36	1.0
		Silicon, Total	286 J	MG/KG	0.82	1.0
		Vanadium, Total	41.6	MG/KG	0.09	1.0
		Zinc, Total	76.9	MG/KG	0.05	1.0

2/23/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 12/29/05

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0512L942

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J10VC2	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	5860	MG/KG	1.8	1.0
		Arsenic, Total	2.9	MG/KG	0.34	1.0
		Boron, Total	5.6	MG/KG	0.27	1.0
		Barium, Total	82.3	MG/KG	0.02	1.0
		Beryllium, Total	0.28	MG/KG	0.01	1.0
		Calcium, Total	6510	MG/KG	1.2	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	6.2	MG/KG	0.12	1.0
		Chromium, Total	10.4	MG/KG	0.16	1.0
		Copper, Total	17.4 J	MG/KG	0.12	1.0
		Iron, Total	16400	MG/KG	3.2	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1120	MG/KG	5.5	1.0
		Magnesium, Total	3790	MG/KG	1.3	1.0
		Manganese, Total	267	MG/KG	0.02	1.0
		Molybdenum, Total	0.39	MG/KG	0.13	1.0
		Sodium, Total	157	MG/KG	0.17	1.0
		Nickel, Total	10.3	MG/KG	0.13	1.0
		Lead, Total	11.7 J	MG/KG	0.31	1.0
		Antimony, Total	0.40 uJ	MG/KG	0.40	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Silicon, Total	346 J	MG/KG	0.81	1.0
		Vanadium, Total	38.7	MG/KG	0.09	1.0
		Zinc, Total	63.7	MG/KG	0.05	1.0

2/25/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 12/29/05

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0512L942

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J10VC3	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	47.2	MG/KG	1.8	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Boron, Total	0.26 u	MG/KG	0.26	1.0
		Barium, Total	1.3	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	24.2	MG/KG	1.2	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.19	MG/KG	0.16	1.0
		Copper, Total	0.19 J	MG/KG	0.12	1.0
		Iron, Total	311	MG/KG	3.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	19.6	MG/KG	5.4	1.0
		Magnesium, Total	7.4	MG/KG	1.3	1.0
		Manganese, Total	4.3	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Sodium, Total	6.3	MG/KG	0.17	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.40 J	MG/KG	0.30	1.0
		Antimony, Total	0.39 u J	MG/KG	0.39	1.0
		Selenium, Total	0.35 u	MG/KG	0.35	1.0
		Silicon, Total	54.8 J	MG/KG	0.80	1.0
		Vanadium, Total	0.16	MG/KG	0.09	1.0
		Zinc, Total	1.5	MG/KG	0.05	1.0

2/25/06

000013

000000012

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032
LVL#: 0512L942 R0146
SDG/SAF#: ~~H~~ R /RC-032

W.O.#: 11343-606-001-9999-00
Date Received: 12-16-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Sodium was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and sample J10VC3 read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon (73.9%). Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 5 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J10VC1	Aluminum	20,000	92.4
	Antimony	200	93.4
	Copper	200	92.4
	Iron	20,000	89.3
	Zinc	200	89.1

12. The duplicate analyses for 9 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

12/30/05
Date

gmb/m12-942

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-001	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
R.T. Coffman	R.T. Coffman 528-6409	KESSNER, JH	Price Code 8K / 15 DAY
Project Designation	**Sampling Location**	**SAF No.**	**Air Quality** ☐
100-F Remaining Sites Burial Grounds - Soil Full Protocol	126-F-2 Clearwells Stockpile area	RC-032	
Ice Chest No. ERC-01-027	**Field Logbook No.** EFL-1174 / **COA** R126F22000	**Method of Shipment** FedEx	
Shipped To EBERLINE SERVICES (LIONVILLE)	**Offsite Property No.** A060136	**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
NA

Special Handling and/or Storage
Cool 4 deg C

0000017

SAMPLE ANALYSIS	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	None	None	None	Cool 4C	
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
	No. of Container(s)	1	1	1	1	1	1	1	1	1	
	Volume	250 / 250mL 500mL 125 12-15-05	60mL	60mL	120mL	500mL	60mL	60mL	60mL	125mL	
		See Item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See Item (2) in Special Instructions	Carbon-14, Tritium - 3H	Isotopic Plutonium	Gross Alpha; Gross Beta	TPH (Total) - 418.1	
Sample No.	Matrix *	Sample Date	Sample Time								
J10VC1	SOIL	12/14/05	0935	X	X	X	X				X
J10VC2	SOIL	12/14/05	0935	X	X	X	X				X
J10VC3	SOIL	12/14/05	0935	X			X				

12/14

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R T Coffman / R T Coffman 12/14/05	1630	Rcvd #2C, 3728 12/14/05	1630
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Rcvd 2C, 3728 12-15-05	1115	Rz Stoffler R.Z Stoffler	12-15-05
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RZ Stoffler R.Z Stoffler w/# 12-15-05	1115	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	12-16-05 10925	[illegible]	12-16-05 10925
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV)
(2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Silver-108 metastable)

Personnel not available to Relinquish samples from 3728 Ref # 2C on 12/15/05

Matrix *
S=Soil
SE=Sediment
SD=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

0000018

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-F-2			DATA PACKAGE: K0146		
VALIDATOR: TLF		LAB: LLI		DATE: 2/23/06	
			SDG: K0146		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J10VC1 J10VC2 J10VC3					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICP interference checks acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

FB – al, barium, calcium, chromium, copper, iron, potassium, magnesium, manganese, sodium, nickel, lead, silicon, vanadium, zinc

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: Copper 136.8% J all > MS recovery no PQS
antimony 4/0.22% J all

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?	Yes	No	N/A
Duplicate results acceptable?	Yes	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)	Yes	No	N/A
Field duplicate RPD values acceptable?	Yes	No	N/A
Field split RPD values acceptable?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: Lead 70.9 – J
Silicon 36.7 % – J

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed?	Yes	No	N/A
ICP serial dilution %D values acceptable?	Yes	No	N/A
ICP post digestion spike required?	Yes	No	N/A
ICP post digestion spike values acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

8. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Rresults supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/29/05

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0512L942

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	05L0752-MB1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	1.8 u	MG/KG	1.8	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Boron, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.06	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	1.9	MG/KG	1.2	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Iron, Total	3.2 u	MG/KG	3.2	1.0
		Potassium, Total	5.5 u	MG/KG	5.5	1.0
		Magnesium, Total	1.4 u	MG/KG	1.4	1.0
		Manganese, Total	0.06	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Sodium, Total	0.97	MG/KG	0.17	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Silicon, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	05C0288-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 12/29/05

CLIENT: INU-HANFORD RC-032 LVL LOT #: 0512L942

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J10VC1	Silver, Total	4.7	0.14u	5.1	92.2	1.0
		Aluminum, Total	6960	6290	203	327.5*	1.0
		Arsenic, Total	193	3.0	203	93.7	1.0
		Boron, Total	93.9	5.5	101	87.3	1.0
		Barium, Total	268	82.4	203	91.6	1.0
		Beryllium, Total	5.2	0.30	5.1	96.1	1.0
		Calcium, Total	8920	6730	2530	86.7	1.0
		Cadmium, Total	4.9	0.07u	5.1	96.1	1.0
		Cobalt, Total	53.9	6.1	50.6	94.5	1.0
		Chromium, Total	30.2	10.9	20.3	95.1	1.0
		Copper, Total	51.4	16.8	25.3	136.8	1.0
		Iron, Total	16800	17500	101	-690. *	1.0
		Mercury, Total	0.17	0.01u	0.14	115.3	1.0
		Potassium, Total	3540	1210	2530	91.9	1.0
		Magnesium, Total	6320	3920	2530	94.3	1.0
		Manganese, Total	315	274	50.6	81.0*	1.0
		Molybdenum, Total	92.5	0.38	101	90.9	1.0
		Sodium, Total	2540	158	2530	94.2	1.0
		Nickel, Total	58.7	10.3	50.6	95.7	1.0
		Lead, Total	58.4	17.2	50.6	81.4	1.0
		Antimony, Total	20.8	0.48	50.6	40.2	1.0
		Selenium, Total	186	0.37	203	91.5	1.0
		Silicon, Total	367	286	101	80.3	1.0
		Vanadium, Total	86.6	41.6	50.6	88.9	1.0
		Zinc, Total	113	76.9	50.6	71.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 12/29/05

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0512L942

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD		DILUTION FACTOR(REP)
-001REP	J10VC1	Silver, Total	0.14u	0.14u	NC		1.0
		Aluminum, Total	6290	4960	23.7		1.0
		Arsenic, Total	3.0	3.1	3.3		1.0
		Boron, Total	5.5	4.8	13.6		1.0
		Barium, Total	82.4	74.1	10.6		1.0
		Beryllium, Total	0.30	0.27	11.7		1.0
		Calcium, Total	6730	6540	2.8		1.0
		Cadmium, Total	0.07u	0.12	~~NC~~ 208		1.0
		Cobalt, Total	6.1	5.3	14.0		1.0
		Chromium, Total	10.9	8.4	25.9		1.0
		Copper, Total	16.8	14.7	13.3		1.0
		Iron, Total	17500	14400	19.7		1.0
		Mercury, Total	0.01u	0.01u	NC		1.0
		Potassium, Total	1210	1010	17.6		1.0
		Magnesium, Total	3930	3300	17.6		1.0
		Manganese, Total	274	246	11.0		1.0
		Molybdenum, Total	0.38	0.20	63.9		1.0
		Sodium, Total	158	130	19.5		1.0
		Nickel, Total	10.3	9.0	13.5		1.0
		Lead, Total	17.2	36.1	70.9		1.0
		Antimony, Total	0.48	0.40u	~~NC~~ 20b		1.0
		Selenium, Total	0.37	0.36u	~~NC~~ 20b		1.0
		Silicon, Total	286	414	36.7		1.0
		Vanadium, Total	41.6	34.8	17.8		1.0
		Zinc, Total	76.9	57.2	29.4		1.0

MP 12/29/05

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/29/05

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0512L942

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	05L0752-LC1	Silver, LCS	48.8	50.0	MG/KG	97.6
		Aluminum, LCS	482	500	MG/KG	96.3
		Arsenic, LCS	954	1000	MG/KG	95.4
		Boron, LCS	478	500	MG/KG	95.5
		Barium, LCS	480	500	MG/KG	96.0
		Beryllium, LCS	25.2	25.0	MG/KG	100.8
		Calcium, LCS	2510	2500	MG/KG	100.5
		Cadmium, LCS	25.4	25.0	MG/KG	101.6
		Cobalt, LCS	253	250	MG/KG	101.3
		Chromium, LCS	51.0	50.0	MG/KG	102.0
		Copper, LCS	122	125	MG/KG	97.4
		Iron, LCS	509	500	MG/KG	101.8
		Potassium, LCS	2260	2500	MG/KG	90.4
		Magnesium, LCS	2460	2500	MG/KG	98.3
		Manganese, LCS	76.3	75.0	MG/KG	101.7
		Molybdenum, LCS	502	500	MG/KG	100.4
		Sodium, LCS	2330	2500	MG/KG	93.4
		Nickel, LCS	200	200	MG/KG	100.1
		Lead, LCS	250	250	MG/KG	100.1
		Antimony, LCS	288	300	MG/KG	95.8
		Selenium, LCS	920	1000	MG/KG	92.0
		Silicon, LCS	370	500	MG/KG	73.9
		Vanadium, LCS	248	250	MG/KG	99.3
		Zinc, LCS	98.5	100	MG/KG	98.5
LCS1	05C0288-LC1	Mercury, LCS	6.5	6.2	MG/KG	104.2

Date: 1 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100F Remaining Sites Burial Grounds – Soil – Full Protocol - Waste Site 126-F-2
Subject: Wet Chemistry - Data Package No. K0146-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0146 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Matrix	Validation	Note
J10VC1	12/14/05	Soil	C	See note 1
J10VC2	12/14/05	Soil	C	See note 1

1 – Chromium VI by 7196A and total petroleum hydrocarbons by 9071/418.1.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI and 28 days for TPH.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike outside QC limits (-110%), all TPH results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between

the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (41%), all TPH results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J10VC1/J10VC2) were submitted for analysis. Field duplicates are analyzed using the same criteria as for laboratory duplicates. The RPD for TPH (83%) was outside QC limits. Under the WCH statement of work, no qualification is required. All other field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package K0146 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a matrix spike outside QC limits (-110%), all TPH results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits, all TPH results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0146	REVIEWER: TLL	PROJECT: 1205-2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
TPH	J	All	MS recovery
TPH	J	All	RPD

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD					
Lab: LLI	SDG: K0146				
Sample Number		J10VC1		J10VC2	
Remarks				Duplicate	
Sample Date		12/14/05		12/14/05	
Wet Chemistry	RQL	Result	Q	Result	Q
Chromium VI	0.5	0.21	U	0.21	U
Total Petroleum Hydrocarbons	5	676	J	1650	J

000040

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/04/06

CLIENT: TNUHANFORD RC-032 K0146 LVL LOT #: 0512L942
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J10VC1	% Solids	96.8	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
		Petroleum Hydrocarbons	676 J	MG/KG	138	1.0
-002	J10VC2	% Solids	97.3	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
		Petroleum Hydrocarbons	1650 J	MG/KG	274	2.0
-003	J10VC3	% Solids	100		0.01	1.0

R 2/25/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032 K0146
LVL#: 0512L942

W.O.#: 11343-606-001-9999-00
Date Received: 12-16-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

   LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike (MS) recovery for Chromium VI was within the 75-125% control limits however MS recovery for Petroleum Hydrocarbons (PHC) was below the control limits that may be attributed to low spike level relative the background concentration of the target analyte.

8. The replicate analyses for Chromium VI and Percent Solids were within the 20% Relative Percent Difference (RPD) control limit however replicate analysis for PHC was outside the control limit that may be attributed to sample inhomogeneity.

9. Results for solid samples are reported on a dry weight basis.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.data

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

11/9/06
Date

njp\i12-942

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-001	Page 1 of 1
Collector: R.T. Coffman	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8K / Data Turnaround: 15 DAY
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 126-F-2 Clearwells Stockpile area		SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-01-027	Field Logbook No.: EFL-1174	COA: R126F22000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060136		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

Cool 4 deg C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	None	None	None	Cool 4C	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	250 +260mL 500 ml 12/15/05	60mL	60mL	120mL	500mL	60mL	60mL	60mL	125mL	

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See items (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Carbon-14, Tritium - [illegible]	Isotopic Plutonium	Gross Alpha, Gross Beta	TPH (Total) - 418.1
J10VC1	SOIL	12/14/05	0935	X	X	X	X					X
J10VC2	SOIL	12/14/05	0935	X	X	X	X					X
J10VC3	SOIL	12/14/05	0935	X			X					

12/14/05

00074

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Coffman / RT Coffman 12/14/05	1630	Refer # 2C, 3728	12/14/05 1630
Refer 2C, 3728	12-15-05 1115	R2 Steffler RJ Steffler	12-15-05 1115
R2 Steffler RJ Steffler with	12-15-05 1115	Fed Ex	
Fed Ex	12-16-05 0935	[illegible]	12-16-05 0935

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7470 - (CV)
(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Silver-108 metastable}

Personnel not available to Relinquish samples from 3728 Ref # 2C on 12/15/05

Matrix *: S=Soil, SE=Sediment, SO=Solid, Sl=Sludge, W=Water, O=Oil, A=Air, DB=Drum Solids, DL=Drum Liquids, T=Tissue, Wi=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 126-F2			DATA PACKAGE: K0146		
VALIDATOR: TLT		LAB: LLI		DATE: 2/23/06	
			SDG: K0146		
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MATRIX					
J10UC1 J10UC2					
				Soil	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No (N/A)
ICB and CCB results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes (No) N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... (Yes) No N/A
Spike recoveries acceptable? ..... Yes (No) N/A
Sike standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
Spike standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: TPH -1109o -J cell no PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes (No) N/A

Duplicate results acceptable? ..... Yes (No) N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)

MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)

Field duplicate RPD values acceptable? ..... Yes (No) N/A

Field split RPD values acceptable? ..... Yes No (N/A)

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: TPH – 40.9 % J all

FD TPH 83%

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A

Sample holding times acceptable? ..... (Yes) No N/A

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... (Yes) No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No (N/A)

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... (Yes) No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/04/06

CLIENT: TNUHANFORD RC-032 K0146 LVL LOT #: 0512L942
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LVI093-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0
BLANK10	05LHC080-MB1	Petroleum Hydrocarbons	133 u	MG/KG	133	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/04/06

CLIENT: TNUHANFORD RC-032 K0146 LVL LOT #: 0512L942
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J10VC1	Soluble Chromium VI	4.1	0.21u	4.1	94.0	1.0
		Insoluble Chromium VI	1110	0.21u	1020	108.7	100
-002	J10VC2	Petroleum Hydrocarbons	992	1650	576	-110.	2.0
BLANK10	05LVI093-MB1	Soluble Chromium VI	4.1	0.20u	4.0	101.8	1.0
		Insoluble Chromium VI	1180	0.20u	1060	111.5	100
BLANK10	05LHC080-MB1	Petroleum Hydrocarbons	563	133 u	560	100.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/04/06

CLIENT: TNUHANFORD RC-032 K0146 LVL LOT #: 0512L942
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J10VC1	Chromium VI	0.21u	0.37	NC	1.0
-002REP	J10VC2	% Solids	97.3	95.1	2.3	1.0
		Petroleum Hydrocarbons	1650	1090	40.9	2.0
-003REP	J10VC3	% Solids	100	99.9	0.020	1.0

Date: 1 March2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100F Remaining Sites Burial Grounds – Soil – Full Protocol - Waste Site 126-F-2
Subject: PCB - Data Package No. K0146-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0146 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Data
J10VC1	12/14/05	Soil	C	See note 1
J10VC2	12/14/05	Soil	C	See note 1

1 – PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged

"J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J10VC1/J10VC2) were submitted for analysis. Field duplicates are assessed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data Package No. K0146 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: K0146	REVIEWER: TLI	PROJECT: 126-F-2	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD					
Laboratory: LLI	SDG: K0146				
Sample Number		J10VC1		J10VC2	
Remarks				Duplicate	
Sample Date		12/14/05		12/14/05	
Extraction Date		12/19/05		12/19/05	
Analysis Date		12/22/05		12/22/05	
PCB	RQL	Result	Q	Result	Q
Aroclor-1016	100	14	U	14	U
Aroclor-1221	100	14	U	14	U
Aroclor-1232	100	14	U	14	U
Aroclor-1242	100	14	U	14	U
Aroclor-1248	100	14	U	14	U
Aroclor-1254	100	35		74	
Aroclor-1260	100	14	U	14	U

000010

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 12/23/05 10:11

RFW Batch Number: 0512L942 Client: TNU-HANFORD RC-032 Work Order: 11343606001 Page: 1

	Cust ID:	J10VC1	J10VC1	J10VC1	J10VC2	PBLKYS	PBLKYS BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	05LE1010-MB1	05LE1010-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	85 %	86 %	84 %	81 %	88 %	78 %
	Decachlorobiphenyl	74 %	72 %	71 %	67 %	78 %	68 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		14 U	115 %	108 %	14 U	13 U	87 %
Aroclor-1221		14 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1232		14 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1242		14 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1248		14 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1254		35	I	I	74	13 U	13 U
Aroclor-1260		14 U	114 %	110 %	14 U	13 U	91 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0512L942
SDG/SAF # K0146 /RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 12-16-2005

PCB

Two (2) soil samples were collected on 12-14-2005.

The samples and their associated QC samples were extracted on 12-19-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 12-21,22-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

12/28/05
Date

som\r:\group\data\pest\tnu hanford\0512-942.pcbs
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 7 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-001	Page 1 of 1
Collector R.T. Coffman	Company Contact R.T. Coffman	Telephone No. 528-6409	Project Coordinator KESSNER, JH	Price Code 8K Data Turnaround 15 DAY
Project Designation 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location 126-F-2 Clearwells Stockpile area		SAF No. RC-032	Air Quality ☐
Ice Chest No. ERC-01-027	Field Logbook No. EFL-1174	COA R126F22000	Method of Shipment FedEx	
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060136		Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

Cool 4 deg C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	None	None	None	Cool 4C	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	250+250mL 500 mL 125 12-15-05	60mL	60mL	120mL	500mL	60mL	60mL	60mL	125mL	

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See Item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See Item (2) in Special Instructions	Carbon-14, Tritium - 3H	Isotopic Plutonium	Gross Alpha; Gross Beta	TPH (Total) - 418.1	
J10VC1	SOIL	12/14/05	0935	X	X	X	X					X	
J10VC2	SOIL	12/14/05	0935	X	X	X	X					X	
J10VC3	SOIL	12/14/05	0935	X			X						

12/14/

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Coffman/RT Coffman 12/14/05	1630	Refer # 2C, 3728	12/14/05 1630
Refer 2C, 3728 12-15-05	1115	RZ Steffler R.Z. Steffler	12-15-05 1115
RZ Steffler R.Z. Steffler	1115 12-15-05	Fed Ex	
Fed Ex	12-16-05 0895	[illegible]	12-16-05 0895

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7470 - (CV)
(2) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Silver-108 metastable]

Personnel not available to Relinquish samples from 3728 Ref # 2C on 12/15/05

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 128-F-2			DATA PACKAGE: K0146		
VALIDATOR: TLI		LAB: LLI		DATE: 2/23/06	
			SDG: K0146		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	(SW-846 8082)	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J10VC1 J10VC2.					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

DDT and endrin breakdowns acceptable? ..... Yes No (N/A)

Comments: _____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes (No) N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... (Yes) No N/A
Surrogate recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: no PAS

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments:

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A
Positive results resolved acceptably? ..... Yes No N/A
Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments:

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A
Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A
Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries acceptable? ..... Yes No N/A
GPC cleanup performed? ..... Yes No N/A
GPC check performed? ..... Yes No N/A
GPC check recoveries acceptable? ..... Yes No N/A
GPC calibration performed? ..... Yes No N/A
GPC calibration check performed? ..... Yes No N/A
GPC calibration check retention times acceptable? ..... Yes No N/A
Check/calibration materials traceable? ..... Yes No N/A
Check/calibration materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments: _____

Date: 1 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100F Remaining Sites Burial Grounds – Soil – Full Protocol - Waste Site 126-F-2
Subject: Radiochemistry - Data Package No. K0146-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0146 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10VC1	12/14/05	Soil	C	See note 1
J10VC2	12/14/05	Soil	C	See note 1

1 – Gross alpha/beta, tritium, carbon-14, alpha spectroscopy and gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

Due to the lack of a matrix spike analysis, all carbon-14 and tritium results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate

analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

One set of field duplicate samples (J10VC1/J10VC2) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. The RPDs for radium-266 (67%), thorium-232 (51%) and potassium-40 (75%) were outside QC limits. Under the WCH statement of work, no qualification is required. All other field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Five analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0146 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of a matrix spike analysis, all carbon-14 and tritium results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are

considered accurate within the standard error associated with the methods

Five analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: KQ146	REVIEWER: TLJ	Project: 120F-2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Tritium Carbon-14	J	All	No MS

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTO CLOSURE HANFORD					
Laboratory: EB					
Case	SDG: K0146				
Sample Number		J10VC1		J10VC2	
Remarks				Duplicate	
Sample Date		12/14/05		12/14/05	
Radiochemistry	RQL	Result	Q	Result	Q
Gross alpha		10.4		8.46	
Gross beta		20.0		16.2	
Tritium	10	0.207	UJ	1.06	UJ
Carbon-14	1	-1.99	UJ	-0.607	UJ
Uranium-233/234	1	0.291		0.532	
Uranium-235	1	0	U	0.077	U
Uranium-238	1	0.524		0.761	
Plutonium-238	1	0	U	0	U
Plutonium-239/240		0.024	U	0.038	U
Potassium-40		13.8		6.31	
Cobalt 60	0.05	U	U	U	U
Cesium 137	0.05	0.071		U	U
Radium-226		0.516		0.256	
Radium-228		0.709		0.420	
Europium 152	0.1	U	U	U	U*
Europium 154	0.1	U	U*	U	U*
Europium 155	0.1	U	U*	U	U*
Thorium-228		0.651		0.613	
Thorium-232		0.709		0.420	
Uranium-235(gea)		U	U	U	U
Uranium-238(gea)		U	U	U	U
Americium-241(gea)		U	U	U	U
Silver-108		U	U	U	U

000010

* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0146

7790-001 J10VC1

DATA SHEET

SDG	7790	Client/Case no	Hanford SDG K0146
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R512098-01	Client sample id	J10VC1
Dept sample id	7790-001	Location/Matrix	126-F-2 Clearwells Stock SOLID
Received	12/16/05	Collected/Weight	12/14/05 09:35 1103 g
% solids	95.8	Custody/SAF No	RC-032-001 RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	10.4	3.9	3.1	10		93A
Gross Beta	12587-47-2	20.0	4.4	5.4	15		93B
Tritium	10028-17-8	0.207	1.4	2.5	400	U J	H
Carbon 14	14762-75-5	-1.99	1.9	3.2	50	U J	C
Uranium 233/234	U-233/234	0.291	0.18	0.22	1.0		U
Uranium 235	15117-96-1	0	0.071	0.27	1.0	U	U
Uranium 238	U-238	0.524	0.24	0.22	1.0		U
Plutonium 238	13981-16-3	0	0.049	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0.024	0.049	0.19	1.0	U	PU
Potassium 40	13966-00-2	13.8	0.84	0.36			GAM
Cobalt 60	10198-40-0	U		0.038	0.050	U	GAM
Cesium 137	10045-97-3	0.071	0.040	0.046	0.10		GAM
Radium 226	13982-63-3	0.516	0.075	0.074	0.10		GAM
Radium 228	15262-20-1	0.709	0.16	0.16	0.20		GAM
Europium 152	14683-23-9	U		0.091	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	0.651	0.050	0.048			GAM
Thorium 232	TH-232	0.709	0.16	0.16			GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		4.7		U	GAM
Americium 241	14596-10-2	U		0.33		U	GAM
Silver 108m	14391-65-2	U		0.027		U	GAM

100-F Remaining Sites Burial Grounds

2/23/06

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0146

7790-002 J10VC2

DATA SHEET

SDG	7790	Client/Case no	Hanford SDG K0146
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R512098-02	Client sample id	J10VC2
Dept sample id	7790-002	Location/Matrix	126-F-2 Clearwells Stock SOLID
Received	12/16/05	Collected/Weight	12/14/05 09:35 1085 g
% solids	95.9	Custody/SAF No	RC-032-001 RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	8.46	3.6	3.3	10		93A
Gross Beta	12587-47-2	16.2	4.6	6.4	15		93B
Tritium	10028-17-8	1.06	1.5	2.4	400	U J	H
Carbon 14	14762-75-5	-0.607	1.8	3.0	50	U J	C
Uranium 233/234	U-233/234	0.532	0.18	0.12	1.0		U
Uranium 235	15117-96-1	0.077	0.062	0.12	1.0	U	U
Uranium 238	U-238	0.761	0.21	0.097	1.0		U
Plutonium 238	13981-16-3	0	0.038	0.15	1.0	U	PU
Plutonium 239/240	PU-239/240	0.038	0.038	0.15	1.0	U	PU
Potassium 40	13966-00-2	6.31	0.46	0.30			GAM
Cobalt 60	10198-40-0	U		0.036	0.050	U	GAM
Cesium 137	10045-97-3	U		0.039	0.10	U	GAM
Radium 226	13982-63-3	0.256	0.072	0.074	0.10		GAM
Radium 228	15262-20-1	0.420	0.13	0.13	0.20		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	0.613	0.078	0.073			GAM
Thorium 232	TH-232	0.420	0.13	0.13			GAM
Uranium 235	15117-96-1	U		0.20		U	GAM
Uranium 238	U-238	U		4.2		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM
Silver 108m	14391-65-2	U		0.029		U	GAM

100-F Remaining Sites Burial Grounds

2/25/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/11/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0146 was composed of two solid (soil) samples designated under SAF No. RC-032 with a Project Designation of: 100-F Remaining Sites Burial Grounds – Soil Full Protocol.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on January 11, 2006.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Tritium Analysis

No problems were encountered during the course of the analyses.

2.3 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.4 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.6 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion — 1/13/6

Melissa C. Mannion
Senior Program Manager

Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-001	Page 1 of 1

Collector R.T. Coffman	**Company Contact** R.T. Coffman **Telephone No.** 528-6409	**Project Coordinator** KESSNER, JH	**Price Code** 8K **Data Turnaround** 15 DAY
Project Designation 100-F Remaining Sites Burial Grounds - Soil Full Protocol	**Sampling Location** 126-F-2 Clearwells Stockpile area K0146 (T190)	**SAF No.** RC-032	**Air Quality** ☐
Ice Chest No. ERC-01-037	**Field Logbook No.** EFL-1174 **COA** R126F22000	**Method of Shipment** FedEx	
Shipped To EBERLINE SERVICES, LIONVILLE	**Offsite Property No.** A060150	**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
NA < DOT limits

Special Handling and/or Storage
~~Cool 4 deg C~~ RZS 12-15-05
None

0000015

SAMPLE ANALYSIS

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	None	None	None	Cool 4C	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	250mL	60mL	60mL	120mL	500mL	60mL	60mL	60mL	125mL	
	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Carbon-14; Tritium - H3	Isotopic Plutonium + ISOTOPIC URANIUM	Gross Alpha; Gross Beta	TPH (Total) - 418.1	

Sample No.	Matrix *	Sample Date	Sample Time									
J10VC1	SOIL	12/14/05	0935				X	X	X	X		
J10VC2	SOIL	12/14/05	0935				X	X	X	X		
J10VC3	SOIL	12/14/05	0935									

RTC 12/15/05

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1630	Received By/Stored In	Date/Time 1630
RT Coffman / RT Coffman	12/14/05	Refer # 2C, 3728	12/14/05
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time 1025
Refer # 2C, 3728 12-15-05 1025		R2 Steffler, R.J. Steffler	12-15-05
Relinquished By/Removed From	Date/Time 1025	Received By/Stored In	Date/Time
R2 Steffler R.J. Steffler	w/ctt 12-15-05	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	12/16/05	FW	12/16/05 9:30
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7470 - (CV)
(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Silver-108 metastable}

Personnel not available to relinquish samples from 3728
Ref # 2C on 12/15/05

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-F-2			DATA PACKAGE: K0146		
VALIDATOR: TLI		LAB: EB		DATE: 2/23/06	
			SDG: K0146		
ANALYSES PERFORMED					
Gross Alpha/Beta Total Uranium	Strontium-90 Radium-22	Technetium-99 Tritium	Alpha Spectroscopy C T	Gamma Spectroscopy	
SAMPLES/MATRIX					
J10VC1 J10VC2					
				Soil	

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A
Method blank results acceptable? ..... Yes No N/A
Analytes detected in method blank? ..... Yes No N/A
Field blank(s) analyzed? ..... Yes No N/A
Field blank results acceptable? ..... Yes No N/A
Analytes detected in field blank(s)? ..... Yes No N/A
Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A
Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A
LCS/BSS recoveries acceptable? ..... Yes No N/A
LCS/BSS traceable? (Levels D,E) ..... Yes No N/A
LCS/BSS expired? (Levels D,E) ..... Yes No N/A
LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A
Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A
Comments:

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☐ N/A

Chemical carrier added? ..... Yes No N/A
Chemical recovery acceptable? ..... Yes No N/A
Chemical carrier traceable? (Levels D, E) ..... Yes No N/A

Chemical carrier expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... (Yes) No N/A

Tracer recovery acceptable? ..... (Yes) No N/A

Tracer traceable? (Levels D, E) ..... Yes No (N/A)

Tracer expired? (Levels D, E) ..... Yes No (N/A)

Transcription/Calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

_____

_____

_____

_____

9. Matrix Spikes (Levels C, D, E) ..... ☐ N/A

Matrix spike analyzed? ..... Yes (No) N/A

Spike recoveries acceptable? ..... Yes No (N/A)

Spike source traceable? (Levels D, E) ..... Yes No (N/A)

Spike source expired? Levels D, E) ..... Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E) ..... Yes No (N/A)

Comments: no MS - J 3H & C-14

_____

_____

_____

_____

10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... (Yes) No N/A

RPD Values Acceptable? ..... (Yes) No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... (Yes) No N/A

Field duplicate RPD values acceptable? ..... Yes (No) N/A

Field split sample(s) analyzed? ..... Yes (No) N/A

Field split RPD values acceptable? ..... Yes No (N/A)

Performance audit sample(s) analyzed? ..... Yes (No) N/A

Performance audit sample results acceptable? ..... Yes No (N/A)

Comments: No. BAS or FS

FD K-40 75%

Ra-226 67%

Th232 - 5%

12. Holding Times (All levels)

Are sample holding times acceptable? ..... (Yes) No N/A

Comments: _____

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses? (Yes) No N/A

Results supported in raw data?(Levels D, E) Yes No (N/A)

Results Acceptable? (Levels D, E) Yes No (N/A)

Transcription/Calculation errors? (Levels D, E) Yes No (N/A)

MDA's meet required detection limits? Yes (No) N/A

Transcription/calculation errors? (Levels D, E) Yes No (N/A)

Comments: 5 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0146

7790-004 Method Blank

METHOD BLANK

SDG 7790 Client/Case no Hanford SDG K0146
Contact Melissa C. Mannion Contract No. 630

Lab sample id R512098-04 Client sample id Method Blank
Dept sample id 7790-004 Material/Matrix SOLID
SAF No RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.51	1.9	3.0	10	U	93A
Gross Beta	12587-47-2	-2.40	3.1	5.6	15	U	93B
Tritium	10028-17-8	0.495	1.6	2.7	400	U	H
Carbon 14	14762-75-5	-1.42	2.0	3.4	50	U	C
Uranium 233/234	U-233/234	0.083	0.11	0.21	1.0	U	U
Uranium 235	15117-96-1	0	0.067	0.26	1.0	U	U
Uranium 238	U-238	0.028	0.056	0.21	1.0	U	U
Plutonium 238	13981-16-3	0.017	0.069	0.13	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.034	0.13	1.0	U	PU
Potassium 40	13966-00-2	U		0.58		U	GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	U		0.021	0.10	U	GAM
Radium 226	13982-63-3	U		0.046	0.10	U	GAM
Radium 228	15262-20-1	U		0.10	0.20	U	GAM
Europium 152	14683-23-9	U		0.052	0.10	U	GAM
Europium 154	15585-10-1	U		0.059	0.10	U	GAM
Europium 155	14391-16-3	U		0.070	0.10	U	GAM
Thorium 228	14274-82-9	U		0.033		U	GAM
Thorium 232	TH-232	U		0.10		U	GAM
Uranium 235	15117-96-1	U		0.086		U	GAM
Uranium 238	U-238	U		2.4		U	GAM
Americium 241	14596-10-2	U		0.16		U	GAM
Silver 108m	14391-65-2	U		0.016		U	GAM

100-F Remaining Sites Burial Grounds

QC-BLANK #55497

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0146

7790-003

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7790
Contact Melissa C. Mannion

Client/Case no Hanford SDG K0146
Contract No. 630

Lab sample id R512098-03
Dept sample id 7790-003

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No RC-032

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	170	16	3.5	10		93A	214	8.6	79	73-127	70-130
Gross Beta	187	9.9	5.5	15		93B	198	7.9	94	77-123	70-130
Tritium	873	39	10	400		H	937	37	93	84-116	80-120
Carbon 14	2170	15	3.5	50		C	2130	85	102	84-116	80-120
Uranium 233/234	17.4	1.8	0.81	1.0		U	18.6	0.74	94	83-117	80-120
Uranium 235	14.1	1.5	0.19	1.0		U	15.1	0.60	93	82-118	80-120
Uranium 238	18.0	1.8	0.77	1.0		U	20.2	0.81	89	84-116	80-120
Plutonium 238	23.0	2.1	0.18	1.0		PU	23.8	0.95	97	84-116	80-120
Plutonium 239/240	26.3	2.4	0.18	1.0		PU	26.4	1.1	100	83-117	80-120
Cobalt 60	0.745	0.057	0.027	0.050		GAM	0.739	0.030	101	74-126	80-120
Cesium 137	0.520	0.045	0.037	0.10		GAM	0.544	0.022	96	74-126	80-120

100-F Remaining Sites Burial Grounds

QC-LCS #55496

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0146

7790-005 J10VC1

DUPLICATE

SDG 7790 Client/Case no Hanford SDG K0146

Contact Melissa C. Mannion Contract No. 630

DUPLICATE	ORIGINAL	
Lab sample id R512098-05	Lab sample id R512098-01	Client sample id J10VC1
Dept sample id 7790-005	Dept sample id 7790-001	Location/Matrix 126-F-2 Clearwells Stock SOLID
	Received 12/16/05	Collected/Weight 12/14/05 09:35 1103 g
% solids 95.8	% solids 95.8	Custody/SAF No RC-032-001 RC-032

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	6.06	3.2	3.5	10		93A	10.4	3.9	3.1		53	102	1.6
Gross Beta	22.7	5.6	7.7	15		93B	20.0	4.4	5.4		13	59	0.6
Tritium	0.248	1.5	2.5	400	U	H	0.207	1.4	2.5	U	-		0
Carbon 14	-0.540	2.6	4.4	50	U	C	-1.99	1.9	3.2	U	-		0.9
Uranium 233/234	0.361	0.20	0.25	1.0		U	0.291	0.18	0.22		21	124	0.5
Uranium 235	0.119	0.16	0.30	1.0	U	U	0	0.071	0.27	U	-		1.4
Uranium 238	0.492	0.27	0.25	1.0		U	0.524	0.24	0.22		6	107	0.2
Plutonium 238	0	0.074	0.28	1.0	U	PU	0	0.049	0.19	U	-		0
Plutonium 239/240	0	0.074	0.28	1.0	U	PU	0.024	0.049	0.19	U	-		0.5
Potassium 40	14.0	0.73	0.20			GAM	13.8	0.84	0.36		1	34	0.1
Cobalt 60	U		0.020	0.050	U	GAM	U		0.038	U	-		0.8
Cesium 137	0.089	0.024	0.024	0.10		GAM	0.071	0.040	0.046		22	93	0.7
Radium 226	0.511	0.046	0.039	0.10		GAM	0.516	0.075	0.074		1	41	0.1
Radium 228	0.713	0.090	0.085	0.20		GAM	0.709	0.16	0.16		1	50	0
Europium 152	U		0.050	0.10	U	GAM	U		0.091	U	-		0.8
Europium 154	U		0.063	0.10	U	GAM	U		0.11	U	-		0.7
Europium 155	U		0.065	0.10	U	GAM	U		0.12	U	-		0.8
Thorium 228	0.589	0.026	0.024			GAM	0.651	0.050	0.048		10	35	0.9
Thorium 232	0.713	0.090	0.085			GAM	0.709	0.16	0.16		1	50	0
Uranium 235	U		0.14		U	GAM	U		0.16	U	-		0.2
Uranium 238	U		2.5		U	GAM	U		4.7	U	-		0.8
Americium 241	U		0.11		U	GAM	U		0.33	U	-		1.3
Silver 108m	U		0.014		U	GAM	U		0.027	U	-		0.8

100-F Remaining Sites Burial Grounds

QC-DUP#1 55498

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 01/11/06

Date: 1 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100F Remaining Sites Burial Grounds – Soil – Full Protocol - Waste Site 126-F-2
Subject: Semivolatile - Data Package No. K0146-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0146 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10VC1	12/14/05	Soil	C	See note 1
J10VC2	12/14/05	Soil	C	See note 1
J10VC3	12/14/05	Soil	C	See note 1

1 – Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two

times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in samples J10VC1 and J10VC3 were qualified as undetected, raised to the RQL and flagged "U".

All other method blank results were acceptable.

Field Blanks

One field blank (J10VC3) was submitted for analysis. Di-n-butylphthalate was detected in the field blank. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J".

Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike duplicate recovery outside QC limits (53%), all 4-chlor-3-methyl phenol results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (8%), all hexachlorocyclopentadiene results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (39%), all 3-nitroanaline results were qualified as estimates and flagged "J".

Due to the matrix spike being diluted out, all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (34%), all 4-nitroanaline results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (27%), all 4,6-dinitro-2-methylphenol results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (49%), all n-nitrosodiphenylamine results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (48%), all butylbenzylphthalate results were qualified as estimates and flagged "J".

Due to the matrix spike duplicate being diluted out, all 3,3-dichlorobenzidine results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (40%), all chrysene results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (40%), all bis(2-ethylhexyl)phthalate results were qualified as estimates and flagged "J".

Due to LCS recoveries outside QC limits, all nitrobenzene (47%), isophorone (53%), 2-nitrophenol (48%), 2,4-dimethylphenol (45%), 1,2,4-trichlorobenzene (46%), 4-chloro-3-methylphenol (53%), 2-methylnaphthalene (52%) were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to an RPD outside QC limits (46%), all 4-chlor-3-methyl phenol results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (138%), all hexachlorocyclopentadiene results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (70%), all 3-nitroanaline results were qualified as estimates and flagged "J".

Due to the matrix spike being diluted out, all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (82%), all 4-nitroanaline results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (73%), all 4,6-dinitro-2-methylphenol results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (49%), all butylbenzylphthalate results were qualified as estimates and flagged "J".

Due to the matrix spike duplicate being diluted out, all 3,3-dichlorobenzidine results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (45%), all benze(a)anthracene results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (64%), all chrysene results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (52%), all bis(2-ethylhexyl)phthalate results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J10VC1/J10VC2) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All undetected analytes in samples J10C1 and J10VC2 and eight analyes in sample J10VC3 exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K0146-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in samples J10VC1 and J10VC3 were qualified as undetected, raised to the RQL and flagged "U".

Due to a matrix spike duplicate recovery outside QC limits (53%), all 4-chlor-3-methyl phenol results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (8%), all hexachlorocyclopentadiene results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (39%), all 3-nitroanaline results were qualified as estimates and flagged "J".

Due to the matrix spike being diluted out, all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (34%), all 4-nitroanaline results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (27%), all 4,6-dinitro-2-methylphenol results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (49%), all n-nitrosodiphenylamine results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (48%), all butylbenzylphthalate results were qualified as estimates and flagged "J".

Due to the matrix spike duplicate being diluted out, all 3,3-dichlorobenzidine results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (40%), all chrysene results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (40%), all bis(2-ethylhexyl)phthalate results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (46%), all 4-chlor-3-methyl phenol results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (138%), all hexachlorocyclopentadiene results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (70%), all 3-nitroanaline results were qualified as estimates and flagged "J".

Due to the matrix spike being diluted out, all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (82%), all 4-nitroanaline results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (73%), all 4,6-dinitro-2-methylphenol results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (49%), all butylbenzylphthalate results were qualified as estimates and flagged "J".

Due to the matrix spike duplicate being diluted out, all 3,3-dichlorobenzidine results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (45%), all benze(a)anthracene results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (64%), all chrysene results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (52%), all bis(2-ethylhexyl)phthalate results were qualified as estimates and flagged "J".

Due to LCS recoveries outside QC limits, all nitrobenzene (47%), isophorone (53%), 2-nitrophenol (48%), 2,4-dimethylphenol (45%), 1,2,4-trichlorobenzene (46%), 4-chloro-3-methylphenol (53%), 2-methylnaphthalene (52%) were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard

error associated with the methods.

All undetected analytes in samples J10C1 and J10VC2 and eight analyes in sample J10VC3 exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K0146	REVIEWER:	Project: 1126-F-2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	J10VC1, J10VC3	Blank contamination
Hexachlorocyclopentadiene 4,6-dinitro-2-methylphenol	J	All	MS
4-chlor-3-methyl phenol 3-nitroanaline 4-nitroanaline n-nitrosodiphenylamine Butylbenzylphthalate Chrysene Bis(2-ethylhexyl)phthalate	J	All	MSD
2,4-dinitrophenol 3,3-dichlorobenzidine	J	All	MS/MSD diluted out
Hexachlorocyclopentadiene 4,6-dinitro-2-methylphenol 4-chlor-3-methyl phenol 3-nitroanaline 4-nitroanaline Butylbenzylphthalate Chrysene Bis(2-ethylhexyl)phthalate 2,4-dinitrophenol 3,3-dichlorobenzidine Benzo(a)anthracene	J	All	RPD
Nitrobenzene Isophorone 2-nitrophenol 2,4-dimethylphenol 1,2,4-trichlorobenzene 4-chloro-3-methylphenol 2-methylnaphthalene	J	All	LCS

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE/PAH ANALYSIS, SOIL MATRIX, (UG/KG) Page__1__ of__2__

Project: WASHINGTON CLOSURE HANFORD							
Laboratory: LLI	SDG: K0146						
Sample Number		J10VC1		J10VC2		J10VC3	
Remarks				Duplicate		E. Blank	
Sample Date		12/14/05		12/14/05		12/14/05	
Extraction Date		12/19/05		12/19/05		12/19/05	
Analysis Date		12/23/05		12/22/05		12/22/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q
Phenol	660	3400	U	3400	U	330	U
bis(2-Chloroethyl)ether	660	3400	U	3400	U	330	U
2-Chlorophenol	660	3400	U	3400	U	330	U
1,3-Dichlorobenzene	660	3400	U	3400	U	330	U
1,4-Dichlorobenzene	660	3400	U	3400	U	330	U
1,2-Dichlorobenzene	660	3400	U	3400	U	330	U
2-Methylphenol	660	3400	U	3400	U	330	U
2,2'-oxybis(1-chloropropane)	660	3400	U	3400	U	330	U
3 and/or 4-Methylphenol	660	3400	U	3400	U	330	U
N-Nitroso-di-n-propylamine	660	3400	U	3400	U	330	U
Hexachloroethane	660	3400	U	3400	U	330	U
Nitrobenzene	660	3400	UJ	3400	UJ	330	UJ
Isophorone	660	3400	UJ	3400	UJ	330	UJ
2-Nitrophenol	660	3400	UJ	3400	UJ	330	UJ
2,4-Dimethylphenol	660	3400	UJ	3400	UJ	330	UJ
bis(2-Chloroethoxy)methane	660	3400	U	3400	U	330	U
2,4-Dichlorophenol	660	3400	U	3400	U	330	U
1,2,4-Trichlorobenzene	660	3400	UJ	3400	UJ	330	UJ
Naphthalene	660	3400	U	3400	U	330	U
4-Chloroaniline	660	3400	U	3400	U	330	U
Hexachlorobutadiene	660	3400	U	3400	U	330	U
4-Chloro-3-methylphenol	660	3400	UJ	3400	UJ	330	UJ
2-Methylnaphthalene	660	3400	UJ	3400	UJ	330	UJ
Hexachlorocyclopentadiene	660	3400	UJ	3400	UJ	330	UJ
2,4,6-Trichlorophenol	660	3400	U	3400	U	330	U
2,4,5-Trichlorophenol	660	8600	U	8600	U	830	U
2-Chloronaphthalene	660	3400	U	3400	U	330	U
2-Nitroaniline	660	8600	U	8600	U	830	U
Dimethylphthalate	660	3400	U	3400	U	330	U
Acenaphthylene	660	3400	U	3400	U	330	U
2,6-Dinitrotoluene	660	3400	U	3400	U	330	U

000014

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

Project: WASHINGTON CLOSURE HANFORD							
Laboratory: LLI	SDG: K0146						
Sample Number		J10VC1		J10VC2		J10VC3	
Remarks				Duplicate		E. Blank	
Sample Date		12/14/05		12/14/05		12/14/05	
Extraction Date		12/19/05		12/19/05		12/19/05	
Analysis Date		12/23/05		12/22/05		12/22/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q
3-Nitroaniline	660	8600	UJ	8600	UJ	830	UJ
Acenaphthene	660	3400	U	170		330	U
2,4-Dinitrophenol	660	8600	UJ	8600	UJ	830	UJ
4-Nitrophenol	660	8600	U	8600	U	830	U
Dibenzofuran	660	3400	U	3400	U	330	U
2,4-Dinitrotoluene	660	3400	U	3400	U	330	U
Diethylphthalate	660	3400	U	3400	U	330	U
4-Chlorophenyl-phenyl ether	660	3400	U	3400	U	330	U
Fluorene	660	3400	U	210		330	U
4-Nitroaniline	660	8600	UJ	8600	UJ	830	UJ
4,6-Dinitro-2-methylphenol	660	8600	UJ	8600	UJ	830	UJ
N-Nitrosodiphenylamine	660	3400	UJ	3400	UJ	330	UJ
4-Bromophenyl-phenyl ether	660	3400	U	3400	U	330	U
Hexachlorobenzene	660	3400	U	3400	U	330	U
Pentachlorophenol	660	8600	U	8600	U	830	U
Phenanthrene	660	910		1600		330	U
Anthracene	660	260		410		330	U
Carbazole	660	3400	U	3400	U	330	U
Di-n-butylphthalate	660	3400	U	3400	U	49	
Fluoranthene	660	1000		1800		330	U
Pyrene	660	800		1800		330	U
Butylbenzylphthalate	660	3400	UJ	3400	UJ	330	UJ
3,3'-Dichlorobenzidine	660	3400	UJ	3400	UJ	330	UJ
Benzo(a)anthracene	660	420	J	760	J	330	UJ
Chrysene	660	560	J	840	J	330	UJ
bis(2-Ethylhexyl)phthalate	660	660	UJ	3400	UJ	660	UJ
Di-n-octylphthalate	660	3400	U	3400	U	330	U
Benzo(b)fluoranthene	660	220		560		330	U
Benzo(k)fluoranthene	660	320		760		330	U
Benzo(a)pyrene	660	410		700		330	U
Indeno(1,2,3-cd)pyrene	660	240		260		330	U
Dibenz(a,h)anthracene	660	3400	U	200		330	U
Benzo(g,h,i)perylene	660	250		270		330	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

	Cust ID:	J10VC1	J10VC1	J10VC1	J10VC2	J10VC3	SBLKRT
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	05LE1009-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	10.0	10.0	10.0	10.0	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	41 %	62 %	61 %	66 %	48 %	54 %
	2-Fluorobiphenyl	54 %	76 %	73 %	81 %	52 %	58 %
	Terphenyl-d14	53 %	62 %	45 %	101 %	68 %	71 %
	Phenol-d5	40 %	74 %	59 %	68 %	49 %	55 %
	2-Fluorophenol	33 %	49 %	56 %	58 %	47 %	54 %
	2,4,6-Tribromophenol	54 %	80 %	65 %	92 %	57 %	59 %
		fl	fl	fl	fl	fl	fl
Phenol		3400 U	70 %	68 %	3400 U	330 U	330 U
bis(2-Chloroethyl)ether		3400 U	87 %	69 %	3400 U	330 U	330 U
2-Chlorophenol		3400 U	87 %	71 %	3400 U	330 U	330 U
1,3-Dichlorobenzene		3400 U	80 %	61 %	3400 U	330 U	330 U
1,4-Dichlorobenzene		3400 U	79 %	64 %	3400 U	330 U	330 U
1,2-Dichlorobenzene		3400 U	82 %	75 %	3400 U	330 U	330 U
2-Methylphenol		3400 U	85 %	74 %	3400 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		3400 U	75 %	77 %	3400 U	330 U	330 U
4-Methylphenol		3400 U	88 %	64 %	3400 U	330 U	330 U
N-Nitroso-di-n-propylamine		3400 U	93 %	73 %	3400 U	330 U	330 U
Hexachloroethane		3400 U	65 %	62 %	3400 U	330 U	330 U
Nitrobenzene		3400 U J	67 %	66 %	3400 U J	330 U J	330 U
Isophorone		3400 U J	83 %	73 %	3400 U J	330 U J	330 U
2-Nitrophenol		3400 U J	70 %	64 %	3400 U J	330 U J	330 U
2,4-Dimethylphenol		3400 U J	88 %	65 %	3400 U J	330 U J	330 U
bis(2-Chloroethoxy)methane		3400 U	76 %	69 %	3400 U	330 U	330 U
2,4-Dichlorophenol		3400 U	68 %	69 %	3400 U	330 U	330 U
1,2,4-Trichlorobenzene		3400 U J	70 %	63 %	3400 U J	330 U J	330 U
Naphthalene		3400 U	85 %	73 %	3400 U	330 U	330 U
4-Chloroaniline		3400 U	71 %	25 %	3400 U	330 U	330 U
Hexachlorobutadiene		3400 U	82 %	74 %	3400 U	330 U	330 U
4-Chloro-3-methylphenol		3400 U J	85 %	53 * %	3400 U J	330 U J	330 U
2-Methylnaphthalene		3400 U J	81 %	75 %	3400 U J	330 U J	330 U
Hexachlorocyclopentadiene		3400 U J	8 * %	44 %	3400 U J	330 U J	330 U
2,4,6-Trichlorophenol		3400 U	76 %	73 %	3400 U	330 U	330 U
2,4,5-Trichlorophenol		8600 U	85 %	66 %	8600 U	830 U	830 U

*= Outside of EPA CLP QC limits.

2/25/06

000016

00000007

RFW Batch Number: 0512L942 Client: TNUHANFORD RC-032 K0146 Work Order: 11343606001 Page: 1b

	Cust ID:	J10VC1		J10VC1		J10VC1		J10VC2		J10VC3		SBLKRT	
	RFW#:	001		001 MS		001 MSD		002		003		05LK1009-MB1	
2-Chloronaphthalene		3400	U	86	%	76	%	3400	U	330	U	330	U
2-Nitroaniline		8600	U	74	%	73	%	8600	U	830	U	830	U
Dimethylphthalate		3400	U	84	%	80	%	3400	U	330	U	330	U
Acenaphthylene		3400	U	87	%	78	%	3400	U	330	U	330	U
2,6-Dinitrotoluene		3400	U	80	%	79	%	3400	U	330	U	330	U
3-Nitroaniline		8600	UJ	81	%	39 *	%	8600	UJ	830	UJ	830	U
Acenaphthene		3400	U	86	%	89	%	170	J	330	U	330	U
2,4-Dinitrophenol		8600	UJ	D	%	26	%	8600	UJ	830	UJ	830	U
4-Nitrophenol		8600	U	78	%	78	%	8600	U	830	U	830	U
Dibenzofuran		3400	U	88	%	86	%	3400	U	330	U	330	U
2,4-Dinitrotoluene		3400	U	76	%	72	%	3400	U	330	U	330	U
Diethylphthalate		3400	U	84	%	81	%	3400	U	330	U	330	U
4-Chlorophenyl-phenylether		3400	U	85	%	80	%	3400	U	330	U	330	U
Fluorene		3400	U	96	%	93	%	210	J	330	U	330	U
4-Nitroaniline		8600	UJ	81	%	34 *	%	8600	UJ	830	UJ	830	U
4,6-Dinitro-2-methylphenol		8600	UJ	27 *	%	58	%	8600	UJ	830	UJ	830	U
N-Nitrosodiphenylamine (1)		3400	UJ	71	%	49 *	%	3400	UJ	330	UJ	330	U
4-Bromophenyl-phenylether		3400	U	72	%	61	%	3400	U	330	U	330	U
Hexachlorobenzene		3400	U	75	%	74	%	3400	U	330	U	330	U
Pentachlorophenol		8600	U	91	%	55	%	8600	U	830	U	830	U
Phenanthrene		910	J	123	%	126	%	1600	J	330	U	330	U
Anthracene		260	J	98	%	75	%	410	J	330	U	330	U
Carbazole		3400	U	99	%	60	%	3400	U	330	U	330	U
Di-n-butylphthalate		3400	U	92	%	86	%	3400	U	49	J	330	U
Fluoranthene		1000	J	123	%	110	%	1800	J	330	U	330	U
Pyrene		800	J	92	%	76	%	1800	J	330	U	330	U
Butylbenzylphthalate		3400	UJ	79	%	48 *	%	3400	UJ	330	UJ	330	U
3,3'-Dichlorobenzidine		3400	UJ	78	%	D	%	3400	UJ	330	UJ	330	U
Benzo(a)anthracene		420	J	93	%	59	%	760	J	330	UJ	330	U
Chrysene		560	J	89	%	40 *	%	840	J	330	UJ	330	U
bis(2-Ethylhexyl)phthalate		~~440~~ 420	JB UJ	68	%	40 *	%	3400	U	~~65~~ 42 JB	UJ	76	J
Di-n-octyl phthalate		3400	U	69	%	100	%	3400	U	330	U	330	U
Benzo(b)fluoranthene		220	J	84	%	96	%	560	J	330	U	330	U
Benzo(k)fluoranthene		320	J	83	%	102	%	760	J	330	U	330	U
Benzo(a)pyrene		410	J	90	%	94	%	700	J	330	U	330	U
Indeno(1,2,3-cd)pyrene		240	J	101	%	79	%	260	J	330	U	330	U
Dibenz(a,h)anthracene		3400	U	95	%	81	%	200	J	330	U	330	U
Benzo(g,h,i)perylene		250	J	91	%	72	%	270	J	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

2/25/04

00017

00000008

Cust ID: **SBLKRT BS**

Sample Information

RFW#: **05LE1009-MB1**
Matrix: SOIL
D.F.: 1.00
Units: ug/Kg

Surrogate Recovery	Nitrobenzene-d5	46	%
	2-Fluorobiphenyl	70	%
	Terphenyl-d14	81	%
	Phenol-d5	66	%
	2-Fluorophenol	59	%
	2,4,6-Tribromophenol	77	%

Phenol		71	%
bis(2-Chloroethyl)ether		68	%
2-Chlorophenol		69	%
1,3-Dichlorobenzene		67	%
1,4-Dichlorobenzene		63	%
1,2-Dichlorobenzene		67	%
2-Methylphenol		72	%
2,2'-oxybis(1-Chloropropane)		63	%
4-Methylphenol		64	%
N-Nitroso-di-n-propylamine		66	%
Hexachloroethane		62	%
Nitrobenzene		47 *	%
Isophorone		53 *	%
2-Nitrophenol		48 *	%
2,4-Dimethylphenol		45 *	%
bis(2-Chloroethoxy)methane		50	%
2,4-Dichlorophenol		50	%
1,2,4-Trichlorobenzene		46 *	%
Naphthalene		47	%
4-Chloroaniline		50	%
Hexachlorobutadiene		50	%
4-Chloro-3-methylphenol		53 *	%
2-Methylnaphthalene		52 *	%
Hexachlorocyclopentadiene		54	%
2,4,6-Trichlorophenol		76	%
2,4,5-Trichlorophenol		71	%

*= Outside of EPA CLP QC limits.

2/25/06

Cust ID: **SBLKRT BS**

RFW#: **05LE1009-MB1**

2-Chloronaphthalene	72	%
2-Nitroaniline	74	%
Dimethylphthalate	78	%
Acenaphthylene	73	%
2,6-Dinitrotoluene	75	%
3-Nitroaniline	95	%
Acenaphthene	75	%
2,4-Dinitrophenol	31	%
4-Nitrophenol	81	%
Dibenzofuran	74	%
2,4-Dinitrotoluene	79	%
Diethylphthalate	79	%
4-Chlorophenyl-phenylether	72	%
Fluorene	75	%
4-Nitroaniline	92	%
4,6-Dinitro-2-methylphenol	69	%
N-Nitrosodiphenylamine (1)	66	%
4-Bromophenyl-phenylether	68	%
Hexachlorobenzene	75	%
Pentachlorophenol	87	%
Phenanthrene	80	%
Anthracene	73	%
Carbazole	79	%
Di-n-butylphthalate	82	%
Fluoranthene	80	%
Pyrene	74	%
Butylbenzylphthalate	84	%
3,3'-Dichlorobenzidine	77	%
Benzo(a)anthracene	68	%
Chrysene	67	%
bis(2-Ethylhexyl)phthalate	77	%
Di-n-octyl phthalate	88	%
Benzo(b)fluoranthene	85	%
Benzo(k)fluoranthene	68	%
Benzo(a)pyrene	75	%
Indeno(1,2,3-cd)pyrene	81	%
Dibenz(a,h)anthracene	79	%
Benzo(g,h,i)perylene	80	%

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

R 2/25/06

000019

000000010

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0512L942
SDG/SAF # K0146/RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 12-16-2005

SEMIVOLATILE

Three (3) soil samples were collected on 12-14-2005.

The samples and their associated samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 12-19-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 12-22,23,27-2005.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. Samples J10VC1 and J10VC2 required a 10-fold dilution due to dark nature of the sample matrix.
5. All surrogate recoveries were within acceptance criteria.
6. Nine (9) of one hundred twenty-six (126) obtainable matrix spike recoveries were outside acceptance criteria. Seven (7) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

1/4/06
Date

som\gorup\data\bna\tnu-hanford\0512-942.doc
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 7 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 05M5418

Initiator: Sharon Saylor
Date: 12-29-05
Client: TNU

Batch: 0512L942
Samples: 001ms, msd
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: Soil
Prep Batch: 05LE1009

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

low recovey of several analytes in the matrix spike, matrix spike dup & blank spike

2. Known or Probable Causes(s)

loss during extraction

3. Discussion and Proposed Action

Other Description: narrate

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: 12/29/05
✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 1/4/06 Other Explanation:
✓ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
(1)	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
	X Project Mgr: Stone/Johnson		GC/LC: Kiger
__	__ Data Management: Stilwell	(2)	X MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-001	Page 1 of 1
Collector R.T. Coffman	Company Contact R.T. Coffman / Telephone No. 528-6409	Project Coordinator KESSNER, JH	Price Code 8K / Data Turnaround 15 DAY
Project Designation 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location 126-F-2 Clearwells Stockpile area	SAF No. RC-032	Air Quality ☐
Ice Chest No. ERC-01-027	Field Logbook No. EFL-1174 / COA R126F22000	Method of Shipment FedEx	
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060136	Bill of Lading/Air Bill No. See 05PC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

Cool 4 deg C

000023

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	None	None	None	Cool 4C	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	250 ~~250mL~~ 500ml RZS 12-15-05	60mL	60mL	120mL	500mL	60mL	60mL	60mL	125mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Carbon-14; Tritium - H3	Isotopic Plutonium	Gross Alpha; Gross Beta	TPH (Total) - 418.1	

Sample No.	Matrix *	Sample Date	Sample Time	(1)	Cr Hex	PCBs	Semi-VOA	(2)	C-14/H3	Iso Pu	Gross α/β	TPH	
J10VC1	SOIL	12/14/05	0935	X	X	X	X					X	
J10VC2	SOIL	12/14/05	0935	X	X	X	X					X	
J10VC3	SOIL	12/14/05	0935	X			X						

(Columns "None (500mL, item 2)" through "Gross Alpha" lined out by hand: RZS 12/14)

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Coffman / RT Coffman	12/14/05 1630	Refer #2C, 3728	12/14/05 1630
Refer 2C, 3728	12-15-05 1115	RZ Steffler R.Z. Steffler	12-15-05 1115
RZ Steffler R.Z. Steffler	12-15-05 1115	Fed Ex	
Fed Ex	12-16-05 0925	[illegible signature]	12-16-05 0925

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7470 - (CV)
(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Silver-108 metastable}

Personnel not available to Relinquish samples from 3728 Ref # 2C on 12/15/05

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	126-F-2		DATA PACKAGE:	K0146	
VALIDATOR:	TLI	LAB:	LLI	DATE:	2/23/96
			SDG:	K0146	
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J10VC1	J10VC2	J10VC3			
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... Yes (No) N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... (Yes) No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes (No) N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: mb - bis(2-ethylhexyl)phthalate - J at RaL C1 + C3

FD - di-n-butyl phthalate - ~~J~~

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... (Yes) No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... Yes (No) N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: 9 MS/MSD over > J all no Pots
2 diluted out

7 LCS over - J all

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD RPD values acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: 11 RPD's out - Jalf

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A
Iinternal standard areas acceptable? ..... Yes No N/A
Internal standard retention times acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A
Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	(N/A)
Compound quantitation acceptable? (Levels D, E)	Yes	No	(N/A)
Results reported for all requested analyses?	(Yes)	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	(N/A)
Samples properly prepared? (Levels D, E)	Yes	No	(N/A)
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes	No	(N/A)
Detection limits meet RDL?	Yes	(No)	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments: C1+C2 one 8 over C3

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed?	Yes	No	(N/A)
GPC check performed?	Yes	No	(N/A)
GPC check recoveries acceptable?	Yes	No	(N/A)
GPC calibration performed?	Yes	No	(N/A)
GPC calibration check performed?	Yes	No	(N/A)
GPC calibration check retention times acceptable?	Yes	No	(N/A)
Check/calibration materials traceable?	Yes	No	(N/A)
Check/calibration materials Expired?	Yes	No	(N/A)
Analytical batch QC given similar cleanup?	Yes	No	(N/A)
Transcription/Calculation Errors?	Yes	No	(N/A)

Comments: